

I claim:

1) A device useful for drilling holes in the earth comprising:

5 a) a horizontal frame member having a first end portion and a second end portion;

b) a vertically inclined tubing casing having a first end portion, an open second end portion, a length dimension, and a hollow interior portion, wherein said first end portion of said vertically inclined tubing casing is attached to the second end portion of said horizontal frame member, said vertically inclined tubing casing further comprising a hole disposed through it along its length, said hole having an axis, wherein the axis of said hole is substantially perpendicular to the length dimension of said vertically inclined tubing casing;

15 c) a vertically inclined brace portion having a first end portion, a second end portion and a length dimension, wherein said first end portion of said vertically inclined brace is attached to said horizontal frame member at a location between said first end portion of said horizontal frame member and said second end portion of said horizontal frame member, such that the length dimension of said 20 vertically inclined brace portion and the length dimension of said vertically - inclined tubing casing are substantially parallel to one another;

d) an adjustable height support having a first end portion, a second end portion, a length dimension, and a length dimension axis, wherein said first end portion of said height support and at least a portion of the length of said height support is 5 slidably disposed within said vertically inclined tubing casing, said height support further comprising a plurality of holes disposed through it along its length, said holes each having an axis, wherein the axis of said holes are substantially perpendicular to the length dimension of said height support;

10 e) a two-axis hinge which is hingedly connected to said second end portion of said height support, said two-axis hinge having a degree of freedom which enables its rotational movement about said length dimension axis of said height support;

15 f) a substantially linear vertical guide outer member having a first end portion, an open second end portion, and a length dimension, wherein said first end portion of said vertical guide outer member is pivotally connected to said height support by means of said two-axis hinge such that said vertical guide outer member is given a sufficient degree of freedom to rotate rendering its second end portion capable of striking out an arc which intersects said adjustable height support at a point along the length of said height support;

g) a hydraulic ram having a hydraulic oil inlet, a hydraulic oil outlet, a length dimension, a first end portion disposed at the end of its stationary portion, and a second end portion disposed at the end of its moveable portion, wherein said hydraulic ram is attached to said vertical guide outer member such that said length dimension of said hydraulic ram and the length dimension of said vertical guide outer member are substantially parallel to one another;

5 h) a substantially linear vertical guide inner member having a first end portion, a second end portion and a length dimension, wherein at least a portion of said first end portion of said vertical guide inner member is slidably disposed within said vertical guide outer member

10 i) a drilling head attached to said second end portion of said hydraulic ram and said second end portion of said vertical guide inner member;

15 j) an engine, wherein said engine is mounted to at least one of said horizontal frame member, said vertically inclined tube casing, or said vertically inclined brace portion;

20 k) a hydraulic pump in effective mechanical contact with said engine such that said engine supplies motive power to said pump;

l) a hydraulic oil reservoir; and

m) means for providing hydraulic fluid under pressure from said hydraulic pump to said hydraulic ram.

2) A device according to claim 1 wherein said engine is an engine selected from the
5 group consisting of: gasoline engines, diesel engines, and electric engines.

3) A device according to claim 1 wherein said means for providing hydraulic fluid under pressure from said hydraulic pump to said hydraulic ram comprises a first hydraulic conduit disposed between the outlet of said hydraulic pump and the inlet of said hydraulic
10 ram.

4) A device according to claim 3 wherein said first hydraulic conduit includes a valve means disposed along its length for selectively controlling the flow of hydraulic fluid.

15 5) A device according to claim 4 further comprising a second hydraulic conduit for transferring hydraulic oil under low pressure from the outlet of said hydraulic ram to said reservoir.

6) A device according to claim 1 wherein said drilling head comprises:

- i) a top plate portion;
- ii) a bottom plate portion having a first hole and a second hole disposed therethrough;
- 5 iii) a hydraulic motor having a drive shaft, wherein said hydraulic motor is mounted to said bottom plate portion such that said drive shaft passes through said first hole in said bottom plate portion;
- iv) a first sprocket disposed on said drive shaft;
- 10 v) a drilling shaft having a first end portion and a second end portion, said first end portion of said drilling shaft having a second sprocket disposed thereon, said drilling shaft being mounted through said second hole in said bottom plate portion by means of a bearing;
- vi) a motion communicator, selected from the group consisting of: chains and belts, in contact with each of said first sprocket and said second sprocket;
- 15 vii) an auger bit having a length dimension, attached to said second end portion of said drilling drive shaft such that the length dimension of said auger bit is substantially parallel to the length dimension of said vertical guide inner member; and
- 20 viii) means for providing hydraulic fluid under pressure from said hydraulic pump to said hydraulic motor.

7) A device according to claim 6 wherein said means for providing hydraulic fluid under pressure from said hydraulic pump to said hydraulic motor comprises a third hydraulic conduit disposed between the outlet of said hydraulic pump and the inlet of said hydraulic motor.

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8) A device according to claim 7 wherein said third hydraulic conduit includes a valve means disposed along its length for selectively controlling the flow of hydraulic fluid.

9) A device according to claim 4 further comprising a fourth hydraulic conduit for
10 transferring hydraulic oil under low pressure from the outlet of said hydraulic motor to
said reservoir.

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